

Propuesta de Interfaces MuleSoft - Signature Router

Fecha: 3 de diciembre de 2025

Proyecto: Signature Router – Epic 14 (Frontend-Backend Integration)

Estado: Propuesta para discusión con equipo MuleSoft

1. Contexto

Signature Router necesita métricas detalladas de los providers de comunicación (SMS, PUSH) para:

- Dashboard de operaciones en tiempo real
- Troubleshooting de errores
- Cumplimiento de SLAs (P99 < 500ms)
- Optimización de costos
- Alertas específicas por provider

Actualmente, los responses de MuleSoft **NO incluyen** metadata del provider real utilizado.

2. Response Actual vs. Response Propuesto

2.1 Response Actual (Limitado)

```
{
  "notificationId": "COMM-EXEC-20241209-001234",
  "status": "SENT",
  "submittedAt": "2024-12-09T15:30:25.123Z",
  "channel": "SMS",
  "communicationExecutionId": "BIAN-COMM-EXEC-UUID-12345"
}
```

2.2 Response Propuesto (Con Metadata)

```
{
  "notificationId": "COMM-EXEC-20241209-001234",
  "status": "SENT",
  "submittedAt": "2024-12-09T15:30:25.123Z",
  "channel": "SMS",
  "communicationExecutionId": "BIAN-COMM-EXEC-UUID-12345",

  "providerMetadata": {
    "providerId": "TWILIO_US",
  }
}
```

```
"providerName": "Twilio US East",
"providerType": "SMS",
"providerLatencyMs": 95,
"mulesoftOverheadMs": 25,
"totalLatencyMs": 120,
"costPerRequest": 0.05,
"currency": "EUR",
"fallbackUsed": false,
"attemptNumber": 1,
"providerTransactionId": "SM1234567890abcdef"
}
}
```

3. Endpoint de Métricas por Provider

3.1 GET /api/v1/providers/metrics

Endpoint para obtener métricas agregadas de todos los providers.

Request:

```
GET /communication-execution/providers/metrics
Authorization: Bearer {token}
X-Correlation-Id: {uuid}
```

Response:

```
{
  "timestamp": "2025-12-03T12:00:00Z",
  "aggregationPeriod": "24h",
  "providers": [
    {
      "providerId": "TWILIO_US",
      "providerName": "Twilio US East",
      "providerType": "SMS",
      "metrics": {
        "requestsTotal": 8521,
        "requestsSuccessful": 8427,
        "requestsFailed": 94,
        "successRate": 98.9,
        "latency": {
          "avgMs": 95,
          "p50Ms": 80,
          "p95Ms": 180,
          "p99Ms": 350
        }
      }
    },
  ],
}
```

```
    "cost": {
      "totalToday": 426.05,
      "totalMonth": 12580.50,
      "perRequest": 0.05,
      "currency": "EUR"
    }
  },
  "health": {
    "status": "UP",
    "uptime": 99.9,
    "lastCheckAt": "2025-12-03T11:59:45Z",
    "failuresLast24h": 0
  }
},
{
  "providerId": "FIREBASE_FCM",
  "providerName": "Firebase Cloud Messaging",
  "providerType": "PUSH",
  "metrics": {
    "requestsTotal": 2134,
    "requestsSuccessful": 2098,
    "requestsFailed": 36,
    "successRate": 98.3,
    "latency": {
      "avgMs": 65,
      "p50Ms": 55,
      "p95Ms": 120,
      "p99Ms": 250
    },
    "cost": {
      "totalToday": 21.34,
      "totalMonth": 640.20,
      "perRequest": 0.01,
      "currency": "EUR"
    }
  },
  "health": {
    "status": "UP",
    "uptime": 99.8,
    "lastCheckAt": "2025-12-03T11:59:50Z",
    "failuresLast24h": 1
  }
}
]
```

3.2 GET /api/v1/providers/{providerId}/metrics

Endpoint para obtener métricas de un provider específico.

Request:

```
GET /communication-execution/providers/TWILIO_US/metrics?period=7d
Authorization: Bearer {token}
```

Query Parameters:

Parámetro	Tipo	Default	Descripción
period	string	24h	Período de agregación: 1h, 24h, 7d, 30d

Response:

```
{
  "providerId": "TWILIO_US",
  "providerName": "Twilio US East",
  "providerType": "SMS",
  "period": "7d",
  "calculatedAt": "2025-12-03T12:00:00Z",

  "summary": {
    "requestsTotal": 52340,
    "requestsSuccessful": 51762,
    "requestsFailed": 578,
    "successRate": 98.9
  },

  "latency": {
    "current": {
      "avgMs": 95,
      "p50Ms": 80,
      "p95Ms": 180,
      "p99Ms": 350
    },
    "timeline": [
      { "timestamp": "2025-12-02T00:00:00Z", "avgMs": 92, "p99Ms": 340 },
      { "timestamp": "2025-12-02T01:00:00Z", "avgMs": 88, "p99Ms": 320 },
      { "timestamp": "2025-12-02T02:00:00Z", "avgMs": 95, "p99Ms": 360 }
    ]
  },

  "throughput": {
```

```
"current": 142,
"unit": "requests/minute",
"timeline": [
  { "timestamp": "2025-12-02T00:00:00Z", "value": 135 },
  { "timestamp": "2025-12-02T01:00:00Z", "value": 128 },
  { "timestamp": "2025-12-02T02:00:00Z", "value": 145 }
]
},

"errors": {
  "total": 578,
  "byType": {
    "INVALID_PHONE": 234,
    "TIMEOUT": 156,
    "RATE_LIMITED": 98,
    "PROVIDER_ERROR": 90
  }
},

"cost": {
  "totalPeriod": 2617.00,
  "perRequest": 0.05,
  "currency": "EUR",
  "timeline": [
    { "date": "2025-12-02", "cost": 426.05 },
    { "date": "2025-12-01", "cost": 412.30 },
    { "date": "2025-11-30", "cost": 398.75 }
  ]
},

"health": {
  "status": "UP",
  "uptime": 99.9,
  "uptimeTimeline": [
    { "date": "2025-12-02", "uptime": 100.0 },
    { "date": "2025-12-01", "uptime": 99.8 },
    { "date": "2025-11-30", "uptime": 99.9 }
  ],
  "incidents": []
}
}
```

4. Endpoint de Health por Provider

4.1 GET /api/v1/providers/health

Endpoint para obtener el estado de salud de todos los providers.

Request:

```
GET /communication-execution/providers/health
Authorization: Bearer {token}
```

Response:

```
{
  "timestamp": "2025-12-03T12:00:00Z",
  "overallStatus": "HEALTHY",
  "providers": [
    {
      "providerId": "TWILIO_US",
      "providerName": "Twilio US East",
      "providerType": "SMS",
      "status": "UP",
      "statusSince": "2025-12-01T00:00:00Z",
      "lastCheckAt": "2025-12-03T11:59:45Z",
      "latencyMs": 45,
      "details": "All systems operational"
    },
    {
      "providerId": "FIREBASE_FCM",
      "providerName": "Firebase Cloud Messaging",
      "providerType": "PUSH",
      "status": "UP",
      "statusSince": "2025-12-02T08:30:00Z",
      "lastCheckAt": "2025-12-03T11:59:50Z",
      "latencyMs": 32,
      "details": "All systems operational"
    },
    {
      "providerId": "VONAGE_EU",
      "providerName": "Vonage EU",
      "providerType": "SMS",
      "status": "DEGRADED",
      "statusSince": "2025-12-03T10:15:00Z",
      "lastCheckAt": "2025-12-03T11:59:55Z",
      "latencyMs": 850,
      "details": "High latency detected",
      "degradedReason": "Provider experiencing delays in EU region"
    }
  ]
}
```

```
}  
]  
}
```

5. Response de Error con Metadata

Cuando un envío falla, necesitamos información detallada del error.

5.1 Error Response Propuesto

```
{  
  "notificationId": "COMM-EXEC-20241209-001235",  
  "status": "FAILED",  
  "submittedAt": "2024-12-09T15:30:25.123Z",  
  "channel": "SMS",  
  "communicationExecutionId": "BIAN-COMM-EXEC-UUID-12346",  
  
  "error": {  
    "code": "PROVIDER_ERROR",  
    "message": "Failed to send SMS notification",  
    "retryable": true  
  },  
  
  "providerMetadata": {  
    "providerId": "TWILIO_US",  
    "providerName": "Twilio US East",  
    "providerType": "SMS",  
    "providerLatencyMs": 450,  
    "attemptNumber": 2,  
    "providerError": {  
      "code": "21211",  
      "message": "The 'To' number +341234 is not a valid phone number.",  
      "category": "INVALID_PHONE"  
    },  
    "fallbackAttempted": true,  
    "fallbackProvider": "VONAGE_EU",  
    "fallbackResult": "ALSO_FAILED"  
  }  
}
```

6. Headers HTTP Alternativos

Si modificar el body no es viable, se pueden usar headers HTTP:

```
HTTP/1.1 200 OK
Content-Type: application/json
X-Provider-Id: TWILIO_US
X-Provider-Name: Twilio US East
X-Provider-Latency-Ms: 95
X-MuleSoft-Overhead-Ms: 25
X-Total-Latency-Ms: 120
X-Provider-Cost: 0.05
X-Provider-Currency: EUR
X-Fallback-Used: false
```

7. Implementación por Fases

Fase 1: Metadata Básica (MVP) - 1 Sprint

Añadir al response actual:

```
{
  "providerMetadata": {
    "providerId": "TWILIO_US",
    "providerLatencyMs": 95
  }
}
```

Esfuerzo estimado: Bajo (la información ya existe internamente)

Fase 2: Metadata Completa - 2 Sprints

```
{
  "providerMetadata": {
    "providerId": "TWILIO_US",
    "providerName": "Twilio US East",
    "providerType": "SMS",
    "providerLatencyMs": 95,
    "mulesoftOverheadMs": 25,
    "costPerRequest": 0.05,
    "currency": "EUR",
    "fallbackUsed": false
  }
}
```


Fase 3: Endpoints de Métricas - 2 Sprints

- GET /providers/metrics – Métricas agregadas
- GET /providers/{id}/metrics – Métricas por provider
- GET /providers/health – Health check detallado

8. Beneficios para MuleSoft

Beneficio	Descripción
Menos escalaciones	Signature Router puede hacer troubleshooting sin escalar a MuleSoft
Mejor SLA percibido	Clientes internos ven métricas detalladas, no solo "MuleSoft funciona"
Optimización de costos	Datos para negociar mejores tarifas con providers
Visibilidad compartida	Dashboard unificado para operaciones

9. Impacto de NO Implementar

Funcionalidad	Con Metadata	Sin Metadata
Dashboard por provider	Twilio: 95%, Firebase: 88%	Solo "MuleSoft": 90%
Troubleshooting	"Twilio error 21211: Invalid phone"	"MuleSoft error genérico"
SLA Tracking	P99 por provider	P99 total (impreciso)
Optimización de costos	Comparar providers	Imposible
Alertas específicas	"Twilio degradado"	"MuleSoft degradado"
Tiempo de resolución	~5 minutos	~24 horas (escalación)

10. Próximos Pasos

1. **Revisar propuesta** con equipo MuleSoft
 2. **Priorizar fases** según capacidad del equipo
 3. **Definir timeline** para implementación
 4. **Coordinar testing** en ambiente DEV/UAT
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11. Contacto

Signature Router Team:

- Responsable técnico: [TBD]
- Email: [TBD]

MuleSoft Team:

- Contacto técnico: [TBD]
 - Email: [TBD]
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Documento preparado para: Reunión técnica MuleSoft

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